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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,214	09/17/2003	Vincent P. Marzen	02CR305/KE	3359

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Attention: Kyle Eppele
ROCKWELL COLLINS, INC.
400 Collins Rd. NE
Cedar Rapids, IA 52498

EXAMINER	
NGUYEN, KEVIN M	
ART UNIT	PAPER NUMBER
2629	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/664,214	MARZEN ET AL.	
	Examiner	Art Unit	
	Kevin M. Nguyen	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Arguments

1. In view of the pre-appeal filed on 11/24/2006, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 7-10, and 17-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Evidence that claims fail(s) to correspond in scope with that which applicant(s) regard as the invention can be found in the original filed 09/17/2003, and amendment filed 6/29/2006. In that claims, applicant has stated "tactile interaction," and "tactile stimulation," and this statement indicates that the invention is different from what is defined in the specification which describes the triangulation method of touching a shockwave on the surface of the touch screen

display panel at page 7. Where is the limitation "tactile interaction" and "tactile stimulation" supporting in the specification?

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshimura et al (US 5,097,415 hereinafter Yoshimura).

6. As to claim 1, Yoshimura teaches a touch screen display apparatus, comprising:

a liquid crystal panel having a viewing area with a periphery *[a liquid crystal display (LCD) panel 11' is displayed the image for viewing on the external surface with a boundary 7 , col. 5, lines 14-20];*

a plurality of shockwave detectors disposed about said periphery *[a plurality of sensors 6 are arranged on the boundary 7 of LCD surface, col. 5 , lines 62-65];*

said plurality of shockwave detectors configured to use a time of arrival of a shockwave to determine a point of original of the shockwave in the liquid crystal panel which results from a touch occurring at said point of origin *[the sensors 6 detect an original point is touched by the vibration input pen 3 in response to arrival timings of the elastic wave, col. 5, line 62—col.6, line 3, and col. 8, lines 7-32].*

As to claim 2, Yoshimura teaches a display of claim 1 wherein said periphery is free from a plurality of pairs of opposing transmitters and receivers are disposed about said periphery where said plurality of pairs of opposing transmitters and receivers are configured to detect a presence of an object disposed on the viewing area and between said transmitters and receivers *[fig. 2A of Yoshimura does NOT disclose the boundary of the LCD panel which has transmitter and receiver pairs disposed thereon].*

As to claim 3, Yoshimura teaches a display of claim 2 wherein said viewing area is free from an electrically conductive transparent layer and free from a connection to an electronic detections means which is configured to detect touching *[fig. 2A of Yoshimura does NOT disclose and NOT electrically connect the boundary of the LCD panel which has transmitter and receiver pairs disposed on a conductive transparent layer of said LCD panel].*

As to claim 4, Yoshimura a display of claim 1 further teaches comprising a first array of shockwave detectors, disposed along a horizontal edge, which define a plurality of columns across said viewing area *[a first sensor 6 is a first array of ultrasonic wave detectors resided at a horizontal edge in fig. 2A]*; and

a second array of shockwave detectors, disposed along a vertical edge, which defines a plurality of rows across said viewing area *[a second sensor 6 is a second array of ultrasonic wave detectors is located at a vertical edge in fig. 2A].*

As to claim 5, Yoshimura teaches a display of claim 4 further comprising a third array of shockwave detectors opposite said first array of shockwave detectors and a fourth array of shockwave detectors opposite the second array of shockwave detectors

[a third sensor 6 is a third array of ultrasonic wave detectors opposites at said horizontal edge, a fourth sensor 6 is a fourth array of ultrasonic wave detectors opposites at a vertical edge in fig. 17, col. 11, lines 20-31].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura in view of Umemoto et al (US 6,891,530) hereinafter Umemoto.

As to claim 6, Yoshimura teaches all of the claimed limitation of claim 1, except wherein said liquid crystal panel is a multi-domain vertically aligned liquid crystal cell.

However, Umemoto teaches a related touch panel comprising a reflected liquid crystal panel 70 and a liquid crystal cell/molecules 54 is a multi-domain vertically aligned cell in Fig. 1 and 4, col. 15, lines 30-47 and col. 15, lines 48-55.

As to claim 7, Yoshimuro teaches a display of claim 6 further comprising means for determining a location of a tactile interaction on said viewing area by analyzing a time of arrival difference of a shockwave, due to said tactile interaction, on at least tow non-co-located points *[the sense of touch (considering as a tactile interaction in recited claim) at the original point is determined by the pen 3 in which two ultrasonic waveforms*

which are propagated plate 8 in response different time point in figs. 12A and 12B, col. 9, line 63--col. 10, line 15].

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have combined Umemoto into Yoshimoto to create the claimed invention. It would have been obvious to modify Yoshimoto to become vertically aligned cell of the liquid crystal molecules as taught by Umemoto in order to achieve the benefit of providing a touch-input type reflective liquid-crystal display device bright, easy to view and excellent in low electric power consumptions (see Umemoto, col. 15, lines 5-7).

8. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura in view of Umemoto as applied to claim 1 above, and further in view of Duwaer (US 5,402151).

As to claim 8, the combination of Yoshimura and Umemoto teaches all of the claimed limitation of claim 1, except for an active thin film transistor layer in said liquid crystal panel, wherein said first array of shockwave detectors is integrated into said thin film transistor layer.

However, Fig. 4 of Duwaer teaches a related touch screen LCD 14 which includes a thin film transistor layer underneath comprising four elastic devices 104, 106, 108 and 110, each elastic device 104-110 comprises a train gauge (col. 8, lines 52-56); digitizing tablet 12 and touch screen 10 include surface acoustic waves (SAW) both have been integrated on LCD 14 (col. 8, lines 31-34).

As to claim 9, Duwaer teaches a display of claim 8 wherein said first array of shockwave detectors is configured to detect a change of capacitance of said liquid

crystal material in response to presence of a shockwave *[electronic circuitry is provided for detecting a capacitive coupling from sheet 10 and 12 towards earth via finger 130 and for thereupon deriving the finger's 130 position, Fig. 5, col. 9, lines 13-16].*

As to claim 10, Duwaer teaches a display of claim 8 wherein said first array of shockwave detectors is configured to detect a change of resistance of said liquid crystal material in response to presence of a shockwave *[the homogeneous electrically resistive sheet 10 and 12 plays a part in both digitizing tabled 12 and touch screen 10, col. 9, lines 9-11].*

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have combined Duwaer, Yoshimura and Umemoto to create the claimed invention. It would have been obvious to modify Yoshimura and Umemoto to make integral the sensors (6) and the thin film transistor layer (14) as taught by Duwaer in order to achieve the benefit of providing a minimum parallax which can be attained owing to the highly compact structure, while fabricating the touch panel at low cost and light weight (Duwaer, col. 9, lines 61-64).

9. Claims 11-13 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura in view of Koh et al (US 6,335,725 hereinafter Koh).

As to claim 11, Yoshimura teaches a method of detecting a touch on a viewing panel of a liquid crystal display, comprising the steps of:

providing a display panel comprising a liquid crystal material, said display having a viewing area *[a liquid crystal display (LCD) panel 11' is displayed the image for viewing on the surface, col. 5, lines 14-20];*

providing a plurality of shockwave detectors which are not located at a single location *[a plurality of sensors 6 are arranged on the boundary 7 of LCD surface 11', col. 5, lines 61-65];*

detecting an arrival of said shockwave at each of said plurality of shockwave detectors, determining a time of arrival of said shockwave at each of said plurality of shockwave detectors, locating said first location in response to said step of determining a time of arrival of said shockwave *[the sensors 6 detect an original point is touched by the vibration input pen 3 in response to arrival timings of the elastic wave, col. 5, line 62—col.6, line 3, and col. 8, lines 7-32].*

Yoshimura fails to teach tapping a first location on said viewing area and thereby generating a shockwave as a result of such tapping.

Koh teaches a method of detecting a touch on a surface of a liquid crystal display (4) serving as an input tablet which incorporates acoustic surface waves sensors and commonly known to those skill in the art such as information regarding the location of the touch and whether the touch is a single tap or a double tap, to the application program (12) (col. 3, lines 30-45, and col. 5, lines 45-53).

As to claim 12, Yoshimura teaches a method of claim 11 wherein said relative time of arrival is based upon a plurality of times of arrival of said shockwave at a plurality of shockwave detectors in fig. 5, col. 6 and col. 7.

As to claim 13, Yoshimura teaches a method of claim 12 wherein said step of detecting an arrival of said shockwave comprises the steps of detecting a change in a

predetermined electrical characteristic of said liquid crystal material in response to a presence of said shockwave in col. 5, lines 62-68.

As to claim 15, Yoshimura teaches a method of claim 11 wherein said step of locating said first location comprises using a triangulation computation *[the coordinates touch input device which includes a configuration with three sensors 6 for detecting trio/triangulation of the touch location of the pen 3 on the touch surface, in Fig. 7, col. 10, lines 7-31].*

As to claim 16, Yoshimura teaches a method of claim 11 wherein said step of locating said first location comprises a determination of a row and a column *[the touch of original point is determined by coordinates x (row) and y (column) in fig. 7, col. 10, lines 7-31].*

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have combined Koh into Yoshimura to create the claimed invention. It would have been obvious to modify Yoshimura to become single tap or double tap as taught by Koh. The motivation for doing so would generally use in small, confined area such as airplane, where there is sufficient room to provide such a touch screen panel (col. 1, lines 25-34 of Koh).

10. As to claim 17, Yoshimura teaches an apparatus for detecting a sense of touch upon a viewing area of a liquid crystal display (an ultrasonic touch-position sensing device 11'), comprising:

a liquid crystal panel having a viewing area, with a periphery *[a liquid crystal display (LCD) panel 11' is displayed the image for viewing on the external surface with a boundary 7, Fig. 2A, col. 5, lines 14-20];*

a plurality of shockwave detectors disposed about said periphery of said viewing surface *[a plurality of sensors 6 are arranged on the boundary 7 of LCD surface 11', col. 5, lines 62-65];*

means for performing a triangulation computation to determine a location of a point of tactile stimulation on said viewing surface, said means for performing being responsive to signals representative of a detection of a shockwave, generated at said point of tactile stimulation, by said plurality of detectors *[the coordinates sensing of touch input device which includes a configuration of three sensors 6 for detecting trio/triangulation of the touch location by the pen 3 on the touch surface, in Fig. 7, col. 8, lines 7-31, each vibration sensor 6 is constituted by a mechanical-electrical converting device such as a piezoelectric transducer, and converted into detection signals which can be processed by the controller 1, col. 5, lines 62-68].*

Yoshimura fails to teach a touch screen display panel including a tactile stimulation.

Koh conventionally discloses a related touch screen display panel including a tactile sensing device in col. 1, lines 35-26.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have combined Koh into Yoshimura to create the claimed invention. It would have been obvious to modify Yoshimura to become tactile sensing of

touch (corresponding to the tactile stimulation) as conventionally disclosed by Koh. The motivation for doing so would generally use in small, confined area such as airplane, where there is sufficient room to provide such a touch display panel (col. 1, lines 25-34 of Koh).

11. Claims 14 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura in view of Koh as applied to claims 11 and 17 above, and further in view of Wilson et al (US 6,504,530) hereinafter Wilson.

As to claim 14, the combination of Yoshimura and Koh teaches all of the claimed limitation of claim 11, except wherein said step of detecting an arrival of said shockwave comprises the steps of detecting a change in a predetermined optical characteristic of said liquid crystal material in response to a presence of said shockwave.

However, Wilson teaches a touchscreen system which includes acoustic wave sensors comprising optical sensors 1307 and 1309 disposed on a liquid crystal layer 1301 and a pair of PVDF thin film piezoelectric strain gauges, the optical sensor 1307 and 1309 must continue to scan the IR beam across the active touch region in order to respond to a touch (Fig. 13, col. 10, lines 18-24, col. 9, line 66 through col. 10, lines 6, and col. 10, lines 57-59).

As to claim 18, the combination of Yoshimura and Koh teaches all of the claimed limitation of claim 17, except wherein said plurality of shockwave detectors comprises a plurality of optical sensors disposed on a layer having thin film transistors thereon, where said plurality of optical sensors measures an optical characteristic of a segment of said liquid crystal material.

However, Wilson teaches a touchscreen system which includes acoustic wave sensors comprising optical sensors 1307 and 1309 disposed on a liquid crystal layer 1301 and a pair of PVDF thin film piezoelectric strain gauges, the optical sensor 1307 and 1309 must continue to scan the IR beam across the active touch region in order to respond to a touch (Fig. 13, col. 10, lines 18-24, col. 9, line 66 through col. 10, lines 6, and col. 10, lines 57-59).

As to claim 19, Wilson teaches an apparatus of claim 17 wherein said optical characteristic is a brightness of light reflection *[reflective grids 705, fig. 7] of a surface on an opposite side of said liquid crystal material from said layer [col. 7, lines 48-58].*

As to claim 20, Yoshimura teaches an apparatus of claim 17 wherein said means for performing a triangulation computation determines a relative time of arrival of a shockwave at said plurality of shockwave detectors *[the coordinates sensing of touch input device which includes a configuration of three sensors 6 for detecting trio/triangulation of the touch location by the pen 3 on the touch surface, in Fig. 7, col. 8, lines 7-31].*

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have combined Wilson, Yoshimura and Koh to create the claimed invention. It would have been obvious to modify the combination of Yoshimura and Koh to make special optical sensors for detecting the elastic wave as taught by Wilson in order to achieve the benefit of improving the high accuracy of the point being touched (Wilson, col. 9, lines 17-20), while fabricating the touch panel with minimizing the power consumption (Wilson, col. 10, lines 50-54).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEVIN M. NGUYEN whose telephone number is 571-272-7697. The examiner can normally be reached on MON-THU from 8:00-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, a supervisor RICHARD A. HJERPE can be reached on 571-272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8000.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the Patent Application Information Retrieval system, see http://portal.uspto.gov/external/portal/pair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin M. Nguyen
Patent Examiner
Art Unit 2629

KMN
January 25, 2007